Users' Evaluation of Learning with A Hypermedia System: Interaction Experience and Satisfaction in Learning

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With its characteristics of random access and multidimensional presentation of information, hypermedia has been seen as a medium that can support interactive and dynamic learning particularly needed for complex domains of knowledge [1, 2]. Do these potential advantages hold in a real classroom situation for learning neuroscience from a user's viewpoint? As part of a broader research project on hypermedia and learning, this work highlights data collected from neuroscience and medical students to examine the users' self-reported evaluation of their interaction and satisfaction in learning with a hypermedia program (BrainStorm).

The results of the first-stage analysis suggest a positive relationship between the main factors of users' interaction experience and the extent to which they find the program enhances their learning. Most students found the hypermedia program useful in facilitating their learning by satisfying their information needs, supporting active exploration and integration, and enhancing visual imagination. However, lower levels of satisfaction were reported on the function of the program in enhancing creative aspects of learning that involve perspective development and idea testing.

Questionnaire surveys for users' evaluation of hypermedia learning were conducted in three neuroscience classrooms at two universities (Stanford University, USA, and University of New South Wales, Australia). The hypermedia system BrainStorm, developed at Stanford University Medical Media and Information Technologies (SUMMIT), is an interactive computer learning program with a highly cross-linked interactive image and information browser designed to facilitate the learning of neuroanatomy. BrainStorm is provided as a learning resource for students in the neuroscience courses and is evaluated by students at the end of the courses after two to five months of use.

Among the variables of interaction experience, four factors are identified as main elements contributing to variance in how users experience their interaction with hypermedia: Matching (users' perceived match between hypermedia characteristics and their learning styles), Flow experience (enjoyment and curiosity when interacting with hypermedia) [3], Activeness in exploration and experimentation, and Disorientation (feeling lost in the web of information). These four factors together explain more than 70% of the total variance of the variables for users' interaction experience.

As for learning satisfaction, three main factors are identified for users' evaluation of the functions of hypermedia in enhancing various aspects of learning: Informational/functional learning (facilitating memorization and review), Fun in learning (increasing interest in neuroscience, making learning fun) , and Creative aspect of learning (enhancing visual imagination, perspective development and testing of one's own ideas). These three factors explain more than 60% of the total variance in users' evaluation of learning satisfaction.

The results of correlation analysis show that users' perceived match between hypermedia characteristics and their individual styles of learning, active engagement with the interactive features of hypermedia, and the extent of "flow" users experience, are important factors of interaction experience related to users' satisfaction in learning. This suggests that further evaluation and design of hypermedia systems for medical education in particular, and computer-assisted instruction in general, need to take into account the match of hypermedia characteristics with users' learning styles, and how interaction experiences of users may affect the function of hypermedia programs in enhancing learning.

References

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